TECHNICAL INFORMATION AND SERVICE DATA

Portable Model 457-P

FOUR VALVE, BROADCAST, DRY-CELL BATTERY OPERATED SUPERHETERODYNE

AND

Portable Model 559-P

FIVE VALVE, BROADCAST, DRY-CELL BATTERY OPERATED SUPERHETERODYNE

ISSUED BY:
AMALGAMATED WIRELESS (AUSTRALASIA) LTD.

ELECTRICAL SPECIFICATIONS

Frequency Range ..... 540-1600 Kc/s (555-187.5 metres)

Intermediate Frequency ..... 455 Kc/s

Battery Complement:

"A" Battery:—One 1.5V, type 745
"B" Battery:—Two 45V, type 482

Battery Consumption:

Model 457-P	"A" Battery =	250 mA
	"B" Battery =	13 mA ("Full")
		8 mA ("Save")
Model 559-P	"A" Battery =	300 mA
	"B" Battery =	13 mA ("Full")
		8 mA ("Save")

Loudspeaker (Permanent Magnet).

4 inch — Code No. BH4
Transformer — 31727B
V. C. Impedance 3 ohms at 400 C.P.S:

Undistorted Power Output ..... 200 milliwatts

Valve Complement:

1T4 R.F. Amplifier (559-P only)
1R5 Converter
1T4 I.F. Amplifier
1S5 Detector, A.F. Amplifier, A.V.C.
3V4 Output

Controls:

ON-OFF — Volume — left-hand end of cabinet
Tuning — right-hand end of cabinet
Battery "Save"/"Full" — rear of chassis

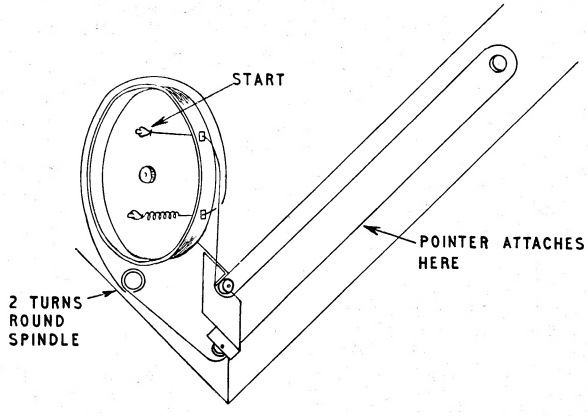
Chassis Removal:

To remove the chassis from the cabinet open the back and disconnect the speaker cable and batteries. Unsolder the loop aerial leads and pull them back through the guides on the side of the cabinet.

Remove the knobs by pulling them straight off their spindles. Remove a screw under each knob when the cream link covers may be lifted off. The screw under each cover on being removed allows the chassis to be withdrawn.

When replacing the chassis pass the loop leads through the guides, keeping the green lead separate from the black and white, and solder the green lead to the panel so that it connects to the inside of the loop winding.

Note that the link covers are slightly different and must be replaced on the correct side, the one marked "TUNE" on the tuning spindle side and the one marked "VOL" on the volume control side.



Drive Cord Replacement:

The accompanying diagram shows the route of the cord and the method of attachment.

CIRCUIT CODE — MODEL 457-P

Code No.	Description	Part No.	Fig. No.	Location
	INDUCTORS			
L1	Loop Aerial Coil	31841		
L2, L3	Oscillator Coil 540-1600 Kc/s	30777	2	C14
L4, L5	1st I.F. Transformer	27324	1	H8
L6, L7	2nd I.F. Transformer	27324	1	D10
	RESISTORS			
R1	0.1 megohm ½ watt		2	C13
R2	0.1 megohm ½ "		2	F14
R3	3.3 megohms ½ "		2	B11
R4	13,000 ohms ½ " ± 5%		2	C11
R5	1.0 megohm volume control (including S1)	27530	2	C3
R6	10.0 megohms ½ watt		2	B8
R7	47,000 ohms ½ "		2	B11
R8	0.47 megohms ½ "		2	B9
R9	3.3 megohms ½ "		2	D10
R10	1.0 megohm ½ "		2	D7
R11	390 ohms ½ " ± 5%		2	E8
R12	1,800 ohms ½ "		2	C6
	CAPACITORS			
C1	0.05 μF paper 200V working		2	C15
C2	9 μμF mica		2	D15
C3	12-445 μμF tuning	18621	1	D5
C4	3-25 μμF Trimmer	27526	2	B15
C5	470 μμF padder ± 2½%		2	C15

Code No.	Description	Part No.	Fig. No.	Location
C6	68 μμF silvered mica		2	E14
C7	12-445 μμF tuning	18621	1	D3
C8	3-25 μμF Trimmer	27526	2	B16
C9	47 μμF silvered mica		2	F13
C10	47 μμF silvered mica		2	F13
C11	6.8 μμF ceramic		2	C12
C12	0.01 μF paper 600V working		2	F11
C13	0.05 μF paper 200V working		2	D13
C14	20 μF 200 P.V. electrolytic		1	H15
C15	0.01 μF paper 600V working		2	E5
C16	200 μμF mica		2	B12
C17	47 μμF silvered mica		2	C11
C18	47 μμF silvered mica		2	C11
C19	0.05 μF paper 200V working		2	D9
C20	100 μμF silvered mica		2	C9
C21	0.01 μF paper 600V working		2	D8
C22	0.0025 μF paper 600V working		2	B8
	TRANSFORMERS			
T1	Loudspeaker Transformer	31727B	1	F17
	LOUDSPEAKER			
	4" Permanent Magnet	BH4		
	SWITCHES			
S1	Power Switch (on R5)		2	C4
S2	Battery Save Switch	22775	2	B6

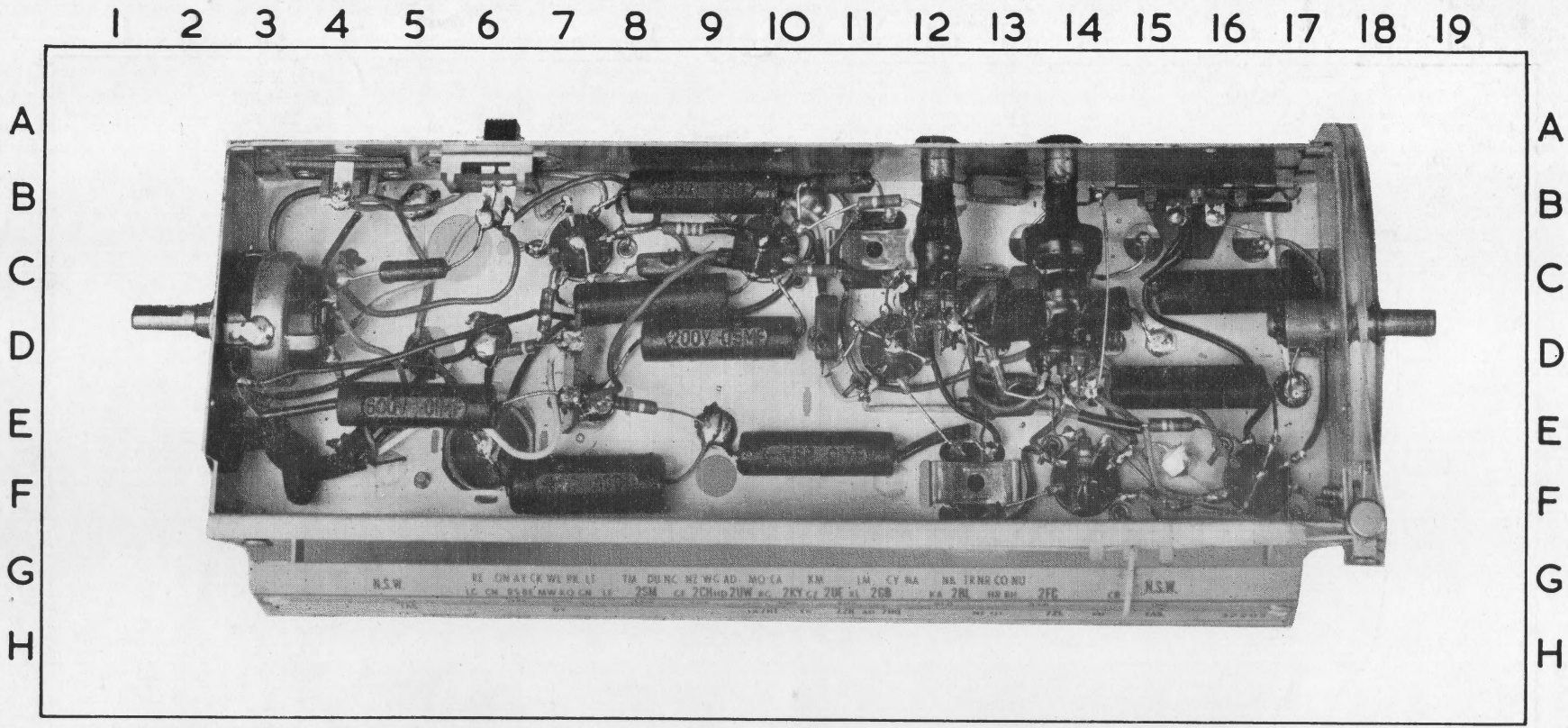


FIG. 4

CHASSIS UNDERNEATH VIEW MODEL 559-P

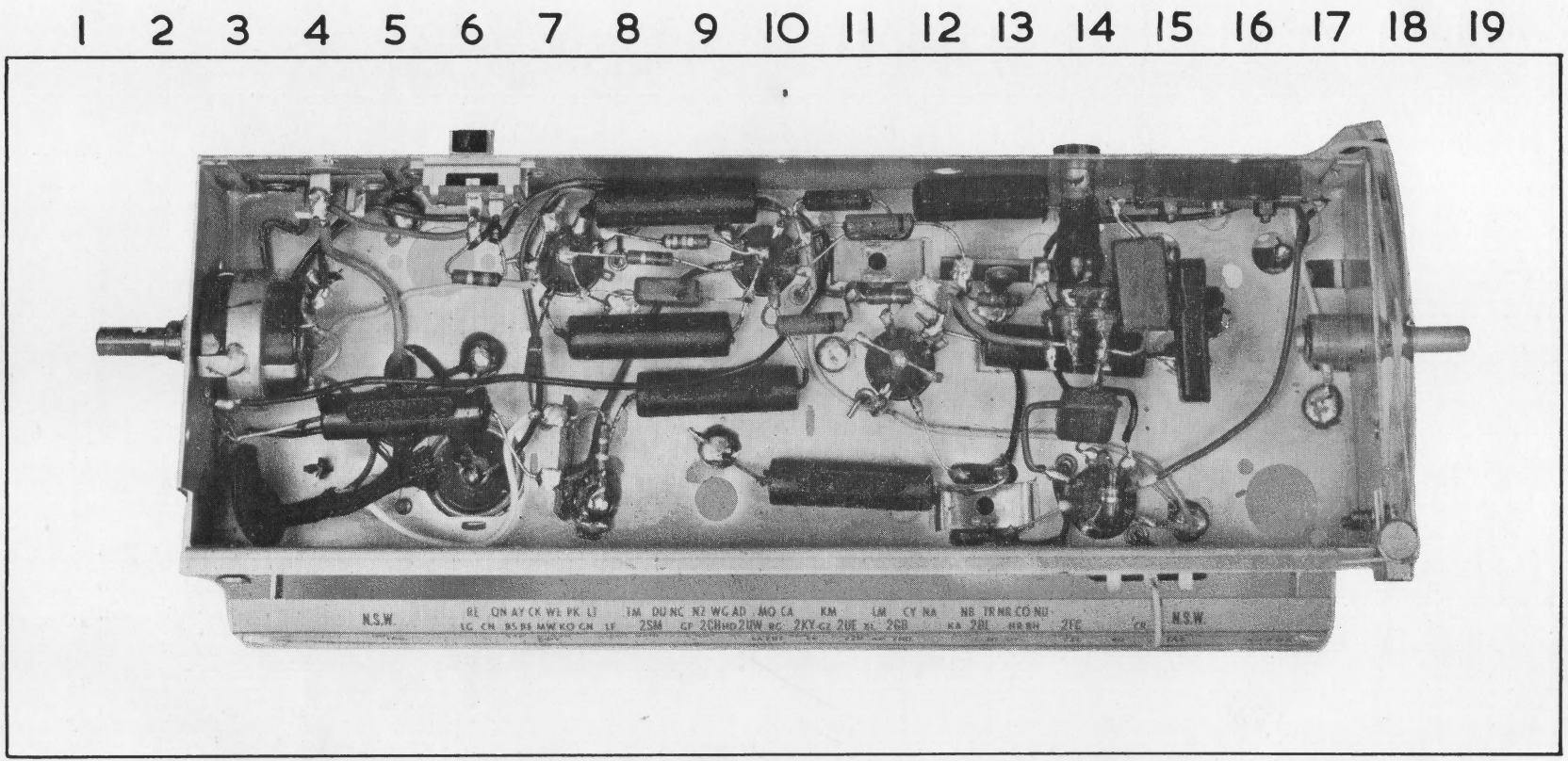


FIG. 2

CHASSIS UNDERNEATH VIEW MODEL 457-P

ALIGNMENT PROCEDURE

Manufacturer's Setting of Adjustments:

The receiver is tested by the manufacturer with precision instruments and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or when it is found that the seals over the adjusting screws are broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using special equipment.

For all alignment operations, keep the generator output as low as possible to avoid A.V.C. action and set the volume control in the maximum clockwise position.

Testing Instruments:

(1) A.W.A. Junior Signal Generator, type 2R3911, or

(2) A.W.A. Modulated Oscillator, type J6726.
If the modulated oscillator is used, connect a 0.25 megohm non-inductive resistor across the output terminals.

(3) A.W.A. Output Meter, type 2M8832.

ALIGNMENT TABLE—MODEL 457-P

Order	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver to:	Adjust for maximum peak output:
	NOTE: If loop leads protruding from the chassis are disconnected, connect a 1 megohm resistor across them.			
1	Grid of 1T4*	455 Kc/s	Gang in full mesh	L7 and L6 Cores
2	Aerial Section of Gang* (Drive End)	455 Kc/s	Gang in full mesh	L5 and L4 Cores
	Repeat adjustments 1 and 2 until the maximum output is obtained.			
	With gang in full mesh, set the pointer to the setting mark at the right-hand end of the dial scale.			
	Replace the cover over the receiver chassis which should then be fitted in the cabinet, the resistor removed from the loop leads and the leads then connected to the aerial in the back lid, the green lead to the inside of the loop. The batteries must be in place in the cabinet and the back closed before remainder of alignment is proceeded with.			
3	Inductively coupled to loop†	600 Kc/s	600 Kc/s (7ZL)	L.F. Osc. Core Adj. (L2)‡§
4	Inductively coupled to loop†	1650 Kc/s	Gang fully open	H.F. Osc. Adj. (C4)§
5	Inductively coupled to loop†	1500 Kc/s	1500 Kc/s (3AK)	H.F. Aer. Adj. (C8)§
	Repeat adjustments 3 and 5 until the maximum output is obtained.			

* A 0.001 μF capacitor should be connected in series with the high side of the test instrument.

† A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument, placed co-axial with the loop and distant not less than 1 foot from it.

‡ Rock the tuning control back and forth through the signal.

§ These adjustments are accessible through 3 holes in the cabinet back.

ALIGNMENT TABLE—MODEL 559-P

Order	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver to:	Adjust for maximum peak output:
	NOTE: If loop leads protruding from the chassis are disconnected, connect a 1.0 megohm resistor across them.			
1	Grid of 1T4* (I.F. Amp.)	455 Kc/s	Gang in full mesh	L9 and L8 Cores
2	Grid of 1R5* (Rear Section of Gang)	455 Kc/s	Gang in full mesh	L7 and L6 Cores
	Repeat adjustments 1 and 2 until the maximum output is obtained.			
	With gang in full mesh, set the pointer to the setting mark at the right-hand end of the dial scale.			
	Replace the cover over the receiver chassis which should then be fitted in the cabinet, remove the resistor from the loop leads and connect them to the aerial in the cabinet back, the green lead to the inside of the loop. The batteries must be in place in the cabinet and the back closed for alignment of aerial circuits.			
	Connect a 10,000 ohm resistor from the rear section of the gang to chassis.			
3	Inductively coupled to loop†	600 Kc/s	600 Kc/s (7ZL)	L.F. Osc. Core Adj. (L4)‡¶
4	Inductively coupled to loop†	1640 Kc/s	Gang fully open	H.F. Osc. Adj. (C9)§
5	Inductively coupled to loop†	1500 Kc/s	1500 Kc/s (3AK)	H.F. Aer. Adj. (C2)¶
	Repeat adjustments 3 and 5 until maximum output is obtained. Remove the 10,000 ohm resistor.			
6	Inductively coupled to loop†	600 Kc/s	600 Kc/s (7ZL)	L.F. R.F. Core Adj. (L3)¶
7	Inductively coupled to loop†	1500 Kc/s	1500 Kc/s (3AK)	H.F. R.F. Adj. (C6)¶
	Repeat adjustments 6 and 7 until maximum output is obtained and finally check adjustments 3 and 5.			

* A 0.001 μF capacitor should be connected in series with the high side of the test instrument.

† A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument, placed co-axial with the loop and distant not less than 1 foot from it.

‡ Rock the tuning control back and forth through the signal.

¶ These adjustments are accessible through 4 holes in the cabinet back.

§ Open the back to make this adjustment and then close to complete alignment.

CHASSIS TOP VIEW MODEL 457-P

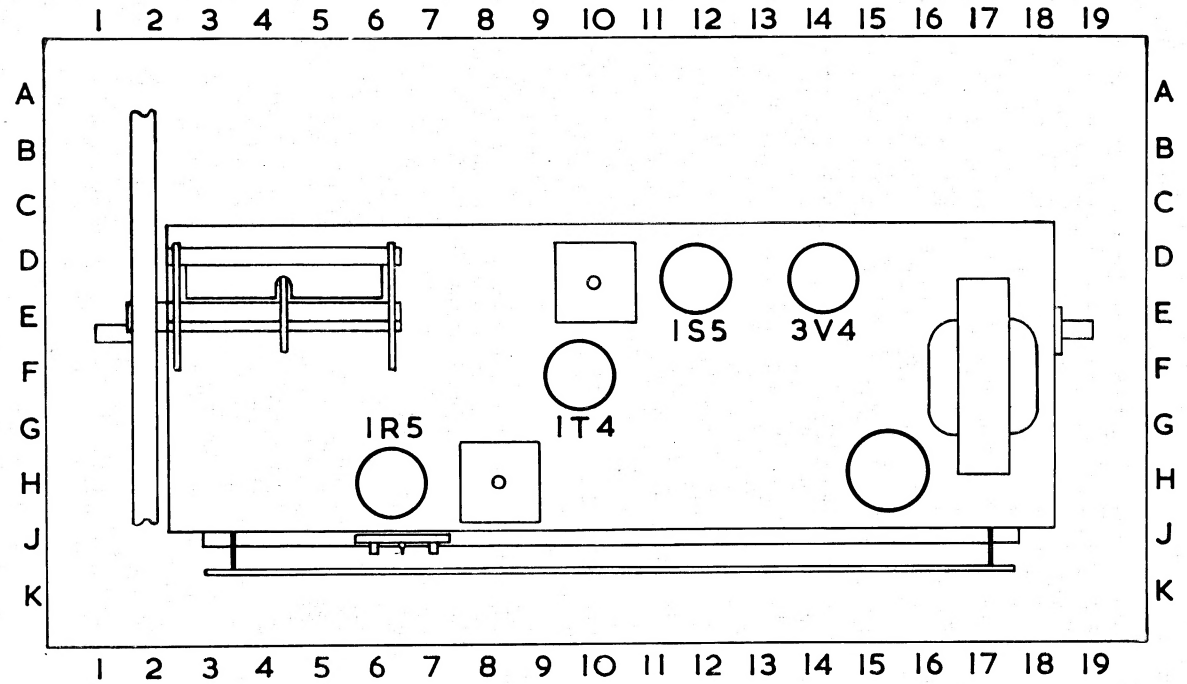


FIG. 1

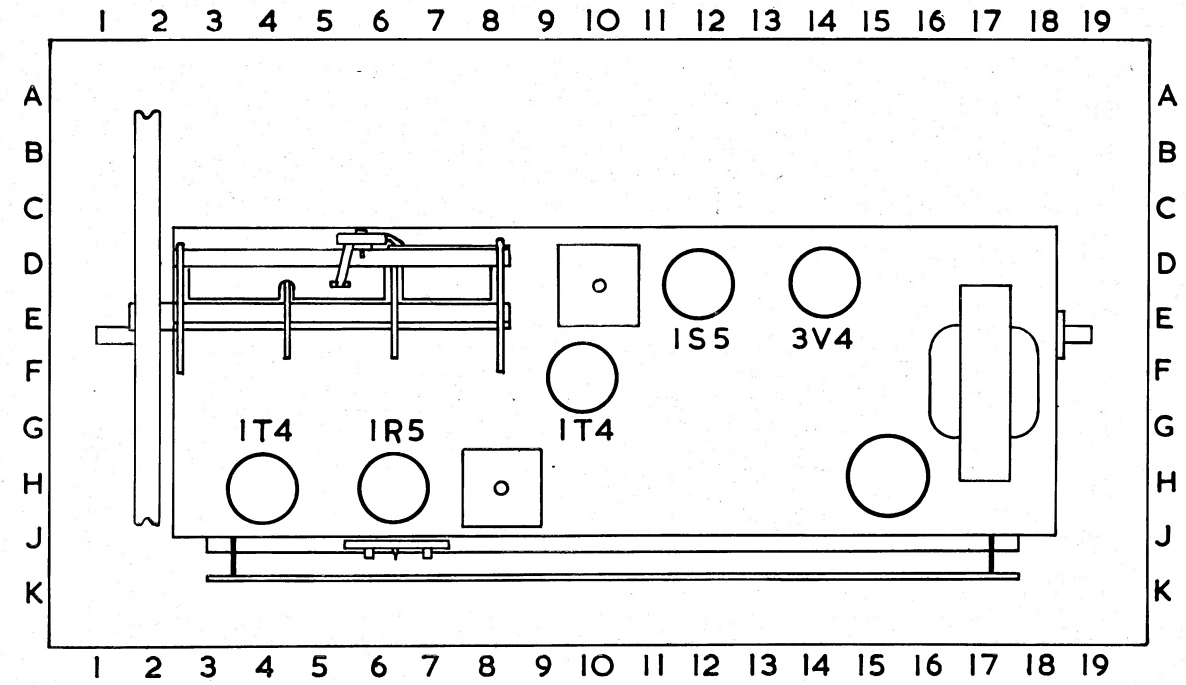


FIG. 3

CHASSIS TOP VIEW MODEL 559-P

CIRCUIT CODE — MODEL 559-P

Code No.	Description	Part No.	Fig. No.	Location
	INDUCTORS			
L1	Loop Aerial Coil	31841		
L2, L3	R.F. Coil 540-1600 Kc/s	30784	4	C14
L4, L5	Oscillator Coil 540-1600 Kc/s	30777	4	C12
L6, L7	1st I.F. Transformer	27324	3	H8
L8, L9	2nd I.F. Transformer	27351	3	D10
	RESISTORS			
R1	0.1 megohm ½ watt ± 10%		4	E15
R2	0.1 megohm ½ " "		4	F14
R3	0.1 megohm ½ " "		4	E13
R4	3.3 megohms ½ " "		4	B11
R5	22,000 ohms ½ " "		4	D13
R6	1,800 ohms ½ " "		4	C5
R7	1.0 megohm Volume Control (includes S1)	27530	4	D3
R8	47,000 ohms ½ watt ± 10%		4	B11
R9	10 megohms ½ " "		4	E8
R10	3.3 megohms ½ " "		4	C10
R11	0.47 megohms ½ " "		4	B9
R12	1.0 megohm ½ " "		4	D7
R13	390 ohms ½ " ± 5%		4	D6
	CAPACITORS			
C1	0.05 μF paper 200V working		4	C16
C2	3-25 μμF trimmer	27526	4	B16
C3	12-445 μμF tuning	30785	3	D3
C4	6.8 μμF ceramic		4	E15
C5	12-445 μμF tuning	30785	3	D7
C6	3-25 μμF trimmer	27526	4	B15
C7	0.05 μF paper 200V working		4	D15
C8	12-445 μμF tuning	30785	3	D5
C9	5-50 μμF trimmer		3	D6
C10	470 μμF padder ± 2½%		4	C13
C11	68 μμF silvered mica		4	E13
C12	47 μμF silvered mica		4	F13
C13	47 μμF silvered mica		4	F13
C14	6.8 μμF ceramic		4	C12
C15	0.01 μF paper 600V working		4	E10
C16	0.05 μF paper 200V working		4	C14
C17	0.1 μF paper 200V working		4	F7
C18	100 μμF silvered mica		4	D11
C19	100 μμF silvered mica		4	B13
C20	100 μμF silvered mica		4	C11
C21	100 μμF silvered mica		4	C11
C22	0.01 μF paper 600V working		4	E5
C23	20 μF 200 P.V. electrolytic		3	H15
C24	0 05 μF paper 200V working		4	D9
C25	100 μμF silvered mica		4	C9
C26	0.01 μF paper 600V working		4	C8
C27	0.0025 μF paper 600V working		4	B9
	TRANSFORMER			
T1	Loudspeaker Transformer	31727B	3	F17
	LOUDSPEAKER			
	4" Permanent Magnet	BH4		
	SWITCHES			
S1	Power Switch on R7		4	D4
S2	Battery Save Switch	22775	4	B6

D.C. RESISTANCE OF WINDINGS
MODEL 457-P

Winding	D.C. Resistance in ohms
Oscillator Coil:	
Primary (L3)	1
Secondary (L2)	4
I.F. Transformer Windings	25
Loudspeaker Input Transformer (T1)	
Primary	450
Secondary	*

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations, and it should not be assumed that a component is faulty if a slightly different reading is obtained.

SOCKET VOLTAGES—MODEL 457-P

	VALVE	Bias Volts	Screen to Chassis Volts	Anode to Chassis Volts	Anode Current mA	Filament Volts
1R5	Converter	0	45	45	0.7	1.5
1T4	I.F. Amp.	0	45	85	1.5	1.5
1S5	Det., A.F. Amp., A.V.C.	0	20*	30*	0.1	1.5
3V4	Output	-5	85	82	6.5	1.5

* Cannot be measured with an ordinary voltmeter.
Measured with no signal input. Volume Control maximum clockwise.

D.C. RESISTANCE OF WINDINGS
MODEL 559-P

Winding	D.C. Resistance in ohms
R.F. Coil:	
Primary (L2)	100
Secondary (L3)	4
Oscillator Coil:	
Primary (L5)	1
Secondary (L4)	4
1st I.F. Transformer Windings	25
2nd I.F. Transformer Windings	20
Loudspeaker Input Transformer (T1)	
Primary	450
Secondary	*

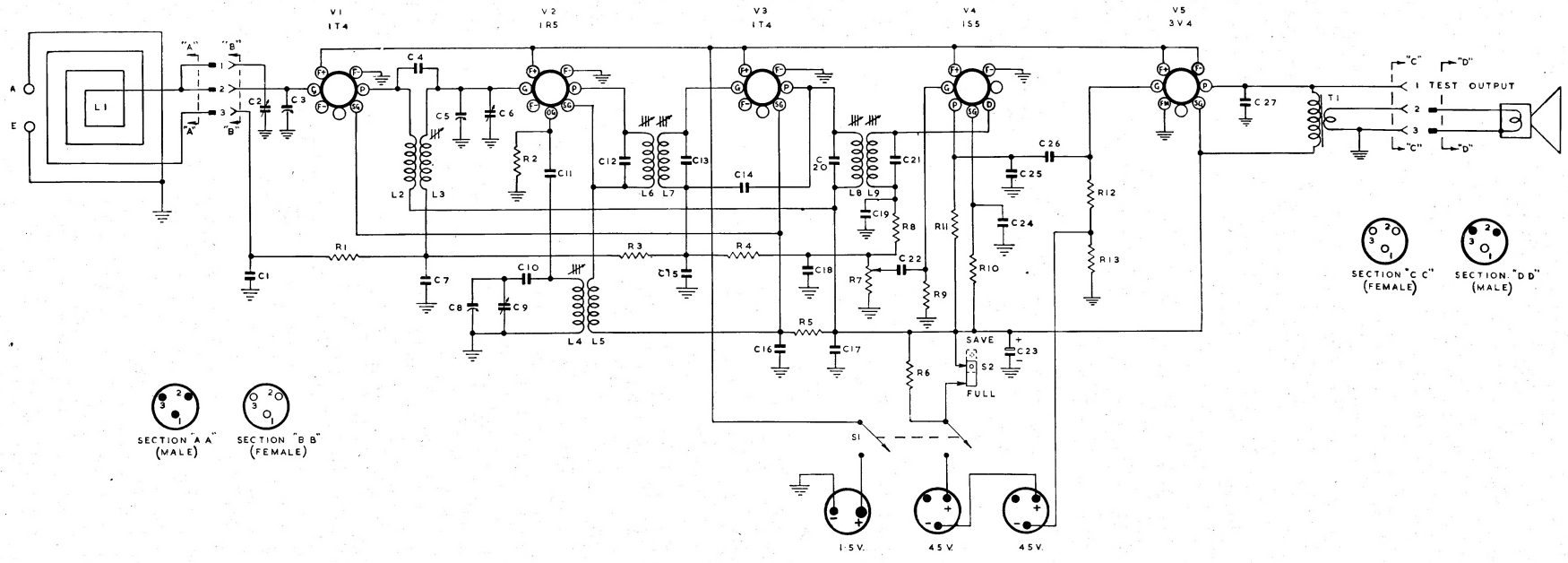
* Less than 1 ohm.

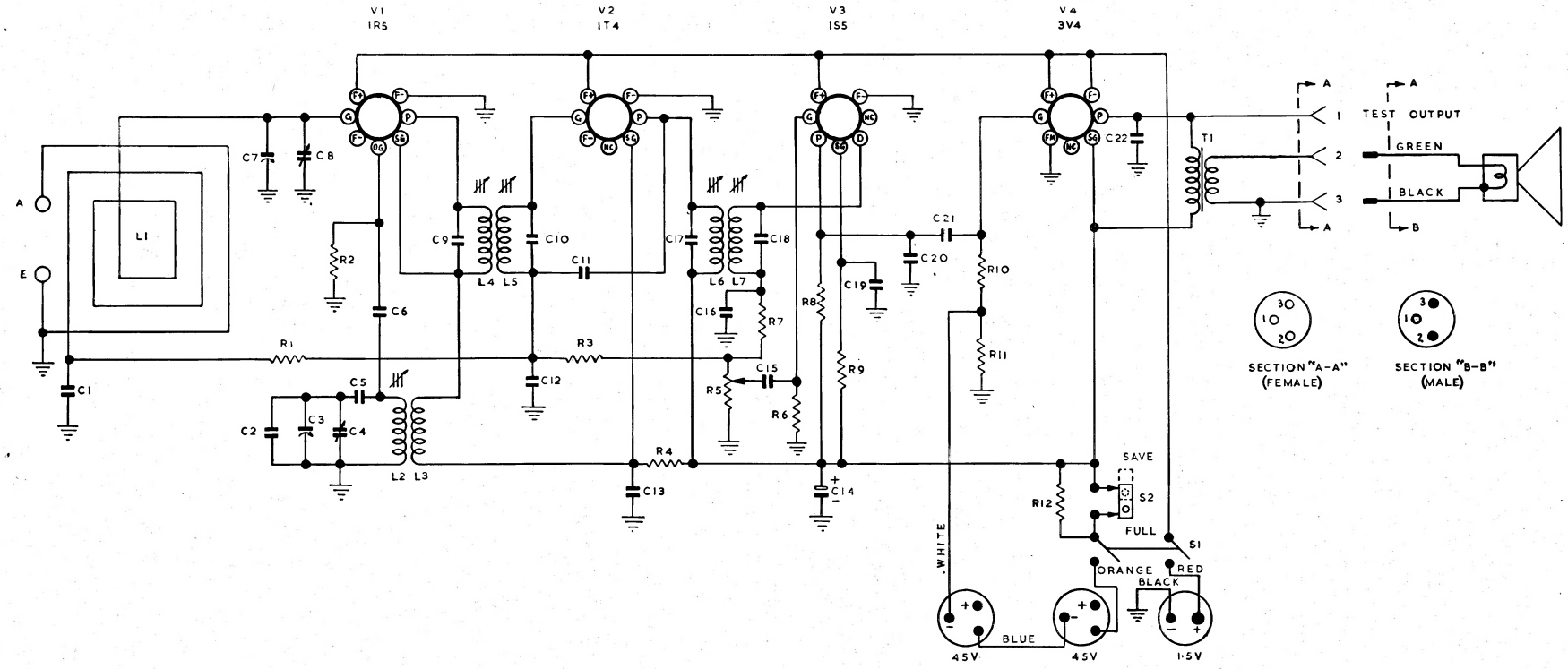
The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations, and it should not be assumed that a component is faulty if a slightly different reading is obtained.

SOCKET VOLTAGES—MODEL 559-P

	VALVE	Bias Volts	Screen to Chassis Volts	Anode to Chassis Volts	Anode Current mA	Filament Volts
1T4	R.F. Amp.	0	35	85	1.0	1.5
1R5	Converter	0	35	35	0.2	1.5
1T4	I.F. Amp.	0	35	85	1.0	1.5
1S5	Det., A.F. Amp., A.V.C.	0	20*	30*	0.1	1.5
3V4	Output	-5	85	82	6.5	1.5

* Cannot be measured with an ordinary voltmeter.
Measured with no signal input. Volume Control maximum clockwise.


V1
1T4
V2
1R5
V3
1T4
V4
1S5
V5
3V4
A
E
L1
"A"
"B"
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
L2
L3
L4
L5
L6
L7
L8
L9
T1
S1
S2
SAVE
FULL
"C"
"D"
1 TEST OUTPUT
2
3
SECTION "A A" (MALE)
SECTION "B B" (FEMALE)
SECTION "C C" (FEMALE)
SECTION "D D" (MALE)
1·5 V.
45 V.
45 V.


V1
1R5
V2
1T4
V3
1S5
V4
3V4
A
E
L1
C7
C8
R2
C6
C9
C10
C11
L4 L5
C17
C18
L6 L7
C16
R7
C15
R5
R6
C21
C20
R10
R11
C19
R8
R9
C22
T1
A
1
2
3
A
TEST OUTPUT
GREEN
BLACK
B
SECTION "A-A"
(FEMALE)
SECTION "B-B"
(MALE)
R1
R3
C1
C5
C2
C3
C4
L2 L3
C12
R4
C13
C14
SAVE
S2
R12
FULL
S1
WHITE
ORANGE
RED
BLACK
BLUE
45V
45V
1·5V